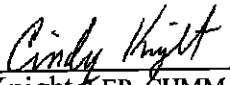


REMEDIAL ACTION REPORT

PCB-Contaminated Fill Pile

**Town Reclamation Yard
183 Richard White Way
Fairfield, Connecticut**

Prepared by:


Cindy Knight, LEP, CHMM, CPESC

LES

Logical Environmental Solutions, LLC
354 South River Road
Tolland, Connecticut

Prepared for:

Town of Fairfield
725 Old Post Road
Fairfield, Connecticut

December 5, 2017

TABLE OF CONTENTS

	<i><u>Page #</u></i>
1.0 INTRODUCTION	1
1.1 Background	1
2.0 PRE-REMEDATION INVESTIGATIONS	3
3.0 PCB REMEDIATION ACTIVITIES	6
3.1 Verification Soil Sampling	7
3.2 Decontamination Activities & Wipe Sampling	15
3.3 Air Sampling & Monitoring Activities	15
3.4 Quality Assurance/Quality Control Practices	16
3.5 Data Quality Assessment and Data Usability Evaluation (DQA/DUE)	16
4.0 CONCLUSIONS & RECOMMENDATIONS	17

Tables

Table 1A – Confirmation Soil Sample Summary	8
Table 1B – Confirmation Soil Sample Summary	9
Table 1C – Confirmation Soil Sample Summary	10
Table 1D – Confirmation Soil Sample Summary	11
Table 1E – Confirmation Soil Sample Summary	12
Table 1F – Confirmation Soil Sample Summary	13
Table 1G – Confirmation Soil Sample Summary	14

Figures

Figure 1 – Site Location
Figure 2 – Site Plan
Figure 3 – Final Confirmation Sampling Locations

Appendices

Appendix A - Pre-Remediation Investigation & Sampling Documents
Appendix B – Photographs of Remediation Activities, June 16, 2017 to October 11, 2017
Appendix C – Laboratory Report for Confirmation Samples
Appendix D – Soil Disposal Manifests & Weigh Slips
Appendix E – Wipe & Air Sample Laboratory Reports

1.0 INTRODUCTION

On behalf of the Town of Fairfield, Logical Environmental Solutions, LLC (LES) has completed the oversight and post-remediation sampling activities in association with the removal and disposal of the polychlorinated biphenyl (PCB) impacted fill material located in the northeast portion of the Reclamation Yard situated on the Town of Fairfield's parcel 183 Richard White Way in Fairfield, Connecticut. Figure 1 depicts the Site Location. The parcel is situated in a GB-classified groundwater area and all of the surrounding properties are connected to the public water distribution service.

The Reclamation Yard is situated in the southern/southwestern portion of the Town-owned property that comprises a total of approximately 124 acres. A pond is situated to the west, the Town Department of Public Works (DPW) Yard is located to the north/northwest, the school bus yard is situated to the north/northeast, a composting facility is located to the east/northeast, and salt marshes are located to the south. The Reclamation Yard portion of the property comprises approximately 5.54 acres and was operated as a soil and material processing yard for the purpose of recycling materials primarily generated through road and building construction and demolition activities. Public access to the site is prevented by a locked gate in the northeast corner of the yard. According to information provided by the Town, the parcel was used as a processing yard operated by private contractors for over 20 years and was going to be shut down as of December 15, 2016 due to visual, noise, and traffic concerns expressed by Town residents. From May 2013 to December 2016, the site was operated and managed by Julian Enterprises.

A Site Plan depicting the Reclamation Yard is included as Figure 2. The PCB remediation activities were completed in accordance with the approved June 12, 2017 Sampling Plan submitted to the Connecticut Department of Energy and Environmental Protection (CTDEEP) PCB Division. A copy of the approved plan is included in Appendix A.

1.1 Background

In September 2016, LES was contracted by the Town of Fairfield DPW to make weekly inspections of the Reclamation Yard for the purpose of noting site conditions and changes, collecting random grab samples of newly deposited soil for analyses of potential contaminants of concern, and reporting the results of weekly inspections to the Town. From September 29, 2016 to December 8, 2016, LES completed eleven (11) weekly inspections and collected ten (10) soil

samples (S-1 to S-10) for analyses at a State-certified laboratory. Soil samples were analyzed for petroleum hydrocarbons using the Connecticut Extractable Petroleum Hydrocarbon (ETPH) Method, volatile organic compounds (VOCs) using EPA Method 8260, semi-volatile organic compounds (SVOCs) using EPA Method 8270, PCBs using EPA Method 8082, and leachable DEEP 15 Metals using the Toxicity Characteristic Leaching Procedure (TCLP). Selected random samples were also analyzed for Pesticides using EPA Method 8081A and Herbicides using EPA Method 8151. Tables 1 to 5 summarizing the results of the ten samples (S-1 to S-10) collected during the weekly inspections from September 29 to November 29, 2016 and a Figure depicting their approximate locations are included in Appendix A. In general, the weekly visual inspections did not note any obvious signs of onsite contamination such as strong odors, staining, or elevated VOC field screening results with the photoionization detector (PID). The fill material observed being processed at the yard consisted of a variety of construction and demolition debris mixed with varying amounts of soil, gravel, concrete, asphalt, and brick.

The results of the soil sample analyses collected prior to November 29, 2016 indicated the presence of low to moderate concentrations of petroleum hydrocarbons and polycyclic aromatic hydrocarbons (PAHs), which are typically detected in soil containing crushed asphalt. Leachable metals, VOCs, PCBs, non-PAH SVOCs, Pesticides, and Herbicides were not detected at elevated concentrations exceeding the CTDEEP Remediation Standard Regulation criteria in the soil samples collected prior to November 29, 2016.

During the November 29, 2016 inspection, LES collected two soil grab samples of newly observed soil from the top (S-9) and eastern side (S-10) of the pile area. The results of the S-9 soil sample analyses were generally consistent with the previous sample results, but the S-10 sample contained PCBs (6.8 milligrams per kilogram [mg/kg]) and leachable lead (10.6 milligrams per liter [mg/L]) at elevated concentrations. Upon learning of the S-10 sample results, on December 13, 2016, LES notified the Town and the Reclamation Yard was closed pending further investigation of the source and extent of the detected contamination. The CTDEEP Emergency Response Unit (Oil and Chemical Spills Division) and Solid Waste Division were also contacted by Town personnel to report the detected contamination. The Emergency Response Unit assigned the incident case no. 2016-06764 but referred the issue to the CTDEEP PCB Division. During the time period after November 29 to December 13, 2016, a significant amount of additional material had been placed in the area making it difficult to pinpoint the exact location of the S-10 sample.

2.0 PRE-REMEDIATION INVESTIGATIONS

In response to the November 29, 2016 Reclamation Yard sample results, the Town of Fairfield covered the eastern portion of the pile with polyethylene sheeting to prevent potential stormwater and wind impacts. The Town also directed their stormwater consultant, Osprey Environmental Engineering, LLC, (Osprey) to collect additional samples from the pile area, the stormwater sedimentation basins including the inlet and outlet, and the stormwater channel at Pine Creek. The purpose of the additional soil and sediment samples was to determine if additional areas of PCB-contaminated soil were present in surficial material in the eastern portion of the pile that may be subject to stormwater runoff, and to determine if contaminants were potentially migrating offsite and impacting the adjacent properties and sensitive salt marsh/surface water body receptors. Osprey also collected an air sample to determine if airborne dust from the pile contained elevated concentrations of lead that could adversely impact adjacent property occupants.

In summary, the results of Osprey's investigation indicated that PCBs were detected in three samples collected from the eastern portion of the pile at concentrations that included 0.38 mg/kg, 0.69 mg/kg, and 13.4 mg/kg. Leachable lead was detected at slightly elevated concentrations ranging from 0.023 mg/L to 2.2 mg/L, but were not detected at a concentration exceeding the RCRA hazardous waste concentration of 5.0 mg/L. Total lead (450 mg/kg) and arsenic (11 mg/kg) were detected in one soil and one sediment sample at slightly elevated concentrations. The soil and sediment samples also contained elevated concentrations of PAHs and petroleum hydrocarbons which were attributed to the presence of asphalt. Appendix A contains Tables 6 to 9 that summarize the results of the sample analyses, as well as a figure depicting Osprey's sample locations (F-1 to F-14).

On December 30, 2016, personnel representing LES, the Town of Fairfield, Julian Enterprises, and their environmental consultant, GO Environmental, met to discuss the investigation and remediation of the detected PCB and lead contaminated soil. Julian Enterprises and their consultant were to take the lead to investigate the extent of the contamination, under the oversight of LES and the Town. After some negotiations, Julian's Enterprises' consultant developed an acceptable work plan that generally conformed with 40 CFR Part 761, Subpart R, Sampling Non-Liquid, Non-Metal PCB Bulk Product Waste for Purposes of Characterization for PCB Disposal in Accordance with 761.62, and Sampling PCB Remediation Waste Destined for Off-Site Disposal

in Accordance with 761.61. The investigation involved the advancement of ten (10) test pits in the eastern portion of the Reclamation Yard to take multi-level samples from the pile for analyses of PCBs using the Soxhlet extraction method EPA 3540C/8082A, leachable (TCLP) lead, and asbestos. Two additional shallow samples were collected from areas anticipated to be beyond the extent of the PCB-contaminated fill for analyses of the same parameters. The investigation was completed by Complete Environmental Services under the direction of LES, GO Environmental, and the Town of Fairfield in February 2017. In summary, the investigation indicated that asbestos-containing materials and RCRA hazardous lead concentrations were not detected in the thirty-two samples collected during this investigation phase. Concentrations of PCBs were detected greater than 1 mg/kg in seventeen (17) of the thirty-two samples collected from the pile, with the highest PCB concentration being 15 mg/kg. A plan depicting the sample locations, and table 10 that summarizes the results of the sample analyses are included in Appendix A.

Based upon the results of the sampling investigations conducted, LES discussed the project with the CTDEEP PCB Division to determine the applicability of the Toxic Substances and Control Act (TSCA) regulations for further Town-lead investigation and disposal of the PCB-contaminated soil. The CTDEEP indicated that the investigation and disposal of the PCB material could be handled through the State CTDEEP PCB Program, and would not require notification of the EPA and management of the material as TSCA-regulated waste.

In March 2017, LES prepared Bid Specifications so the Town could procure the services of a remediation contractor to segregate the large bulky debris (concrete and boulders) from the pile for additional sampling, and load the PCB-contaminated soil into trucks for subsequent transportation and disposal at an approved facility. The initial estimate of the PCB-contaminated soil disposal was approximately 2,200 tons of material. Based upon the public Bid Results, the Town selected Connecticut Tank Removal (CTR) in late April 2017 to complete the remediation at the property. CTR's proposed disposal facility was Hazelton Creek Properties, LLC (HCP) in Moosic (operated by their affiliate Mark Construction) and Hazelton, Pennsylvania under Pennsylvania Beneficial Use Permit #WMGR096NE001 for permitted onsite use as fill on HCP's mine reclamation projects. However, additional waste characterization sampling of the soil was required prior to formal acceptance of the soil.

LES submitted a Sampling Plan to the CTDEEP PCB Division for their review and approval on June 12, 2017 that outlined the proposed sequence of events for the pile bulky debris segregation, bulky debris sampling, and post remediation sampling protocols. In accordance with the CTDEEP Remediation Standard Regulation Criteria, the CTDEEP PCB Division requested that the Residential Direct Exposure Criteria of 1 mg/kg for PCBs be utilized as the basis for determining if the soil and bulky debris would require offsite disposal.

LES also prepared a site-specific Health and Safety Plan that covered all LES and Town personnel working and visiting the secured site. As part of the overall project health and safety concern for occupants and workers on adjacent properties, LES proposed the completion of air quality monitoring and analytical testing of air samples to ensure that dusts and particulates were not migrating offsite and potentially impacting residents and workers downwind from the project.

In addition, LES collected waste characterization samples in accordance with the requirements set forth by HCP. Based upon the estimated and actual amount of soil transported offsite for disposal, LES collected a total of three (3) complete waste characterization sample profiles (WC-1 to WC-3) from the pile, and one additional waste characterization sample (WC-4) analyzed for PCBs. The full waste characterization samples were analyzed for VOCs (8260), SVOCs (8270), PCBs (8082), Total Priority Pollutant Metals, and Leachable (TCLP) Priority Pollutant Metals. In summary, the waste characterization sample PCB concentrations ranged from 0.51 mg/kg to 3.1 mg/kg and leachable lead concentrations ranged from less than 0.1 to 0.26 mg/L. The samples did not contain detectable concentrations of VOCs, and only contained low concentrations of SVOCs, total and leachable metals. Based upon the waste characterization sample results, the soil was deemed non-hazardous waste and was accepted by HCP for use as fill in their Moosic and Hazelton Creek, Pennsylvania facilities. Table 11 in Appendix A summarizes the results of the waste characterization sample analyses.

3.0 PCB REMEDIATION ACTIVITIES

Photographs in chronological order documenting the remediation activities that occurred at the Reclamation Yard are included in Appendix B. On June 16, 2017, CTR mobilized to the Reclamation Yard to commence the bulky debris segregation for subsequent sampling for PCBs. In general concrete and boulders in excess of approximately 3-feet in size were segregated from the pile, manually brushed clean of any adhering soil, and ultimately placed on, and covered by polyethylene sheeting. In accordance with the recommendations from the CTDEEP PCB Division, asphalt slabs were not considered bulky debris and were broken up and transported for offsite disposal at HCP.

On June 23, 2017, CTR completed the bulky debris segregation and LES collected three samples from the material to determine if they contained PCBs. Two concrete samples (Concrete-1 and Concrete-2) and one brick sample (Brick-1) were collected by LES in accordance with the EPA's protocols for sampling porous material in the field, and the samples were analyzed for PCBs using the Method 3540C Soxhlet Extraction/Method 8082. Table REM-1 in the Tables section of this report summarizes the results of the analyses and a copy of the bulky debris analytical report is included in Appendix C. The bulky debris samples did not contain detectable concentrations of PCBs that exceed the minimum laboratory detection limits, which were less than 1 mg/kg. Based upon the results, the bulky debris was placed in a pile on the southwestern area of the Reclamation Yard property.

CTR completed the PCB-contaminated soil removal activities from the eastern portion of the Reclamation Yard from June 20 to October 11, 2017. The extent of the PCB-contaminated soil was greater than originally expected and resulted in multiple removal events and hot-spot clean-ups spanning the approximate four month period due to confirmation sample results that exceeded the CTDEEP's PCB Division requested cleanup criteria of 1 mg/kg. A total of 134 triaxle truckloads containing 3,627.1 tons of contaminated soil was transported offsite to the HCP Pennsylvania facilities for disposal. Copies of the 134 non-hazardous disposal manifests are included in Appendix D.

3.1 Verification Soil Sampling

In accordance with the approved Sampling Plan, LES collected a series of four rounds of confirmation samples to ensure that the PCB-contaminated soil was removed from the pile area. LES collected confirmation soil samples in a 1.5-meter grid across the entire area to document the removal of PCB impacted material exceeding 1 mg/kg. The confirmation soil samples were collected in three-inch (approximate 7.5 cm) depth intervals as discrete, in-place samples using dedicated, disposable sampling cores. The soil was not mixed, composited, or diluted with other material. All samples were analyzed for PCBs using EPA Method 3540C Soxhlet extraction/EPA Method 8082.

The initial confirmation sampling rounds completed on June 26, and 27, 2017 indicated that a significantly greater amount of PCB-contaminated soil necessitated removal for offsite disposal. The only area where PCBs were consistently detected at concentrations less than 1 mg/kg was the southwestern sidewall of the pile that extended into the larger main pile area. Additional verification soil samples were collected after subsequent soil excavations in identified PCB hot-spots in July, August, September, and October. The final verification samples collected from the pile area did not contain PCBs at concentrations that exceed the CTDEEP target remediation criteria of 1 mg/kg. Additional random sampling beyond the extent of the known PCB-contaminated soil in the eastern pile area were also collected to supplement the final verification samples to document that PCBs are not present at concentrations exceeding 1 mg/kg.

A plan depicting the final verification sample locations and supplemental sample locations is included as Figure 3. The laboratory reports from the July to October rounds of verification sampling that include samples not initially meeting the target cleanup criteria of 1 mg/kg are included in Appendix C. The tables on the following pages also summarize the results of the multiple rounds of confirmation soil sampling completed from July to October, 2017.

Table 1A - Confirmation Soil Sample Summary

Sidewall Location & Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)	Sidewall Location & Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)
North N-1A	7-18-17	< 0.36 mg/kg	West W-1A	7-18-17	< 0.38 mg/kg
North N-2A	7-18-17	< 0.34 mg/kg	West W-2A	7-18-17	< 0.36 mg/kg
North N-3A	7-18-17	< 0.34 mg/kg	West W-3A	7-18-17	< 0.37 mg/kg
North N-4A	7-18-17	< 0.34 mg/kg	West W-4A	7-18-17	< 0.38 mg/kg
North N-5A	7-18-17	< 0.35 mg/kg	West W-5A	7-18-17	0.38 mg/kg
North N-6A	7-18-17	< 0.33 mg/kg	West W-6A	7-18-17	< 0.35 mg/kg
North N-7A	7-18-17	< 0.33 mg/kg	West W-7A	7-18-17	< 0.35 mg/kg
North N-8A	7-18-17	< 0.34 mg/kg	West W-8A	7-18-17	< 0.35 mg/kg
North N-9A	7-18-17	< 0.33 mg/kg	West W-9A	7-18-17	< 0.34 mg/kg
North N-10A	7-18-17	< 0.38 mg/kg	West W-10A	7-18-17	< 0.36 mg/kg
North Base/Wall	7-10-17	< 0.34 mg/kg	West W-11A	7-18-17	< 0.36 mg/kg
North Bottom*	7-10-17	7.1 mg/kg/Removed	West W-12A	7-18-17	< 0.34 mg/kg
--	--	--	West W-13A	7-18-17	< 0.33 mg/kg
East Base 1*	7-10-17	41 mg/kg/Removed	West W-14A	7-18-17	< 0.33 mg/kg
East Base 2	7-10-17	< 0.36 mg/kg	West W-15A	7-18-17	< 0.34 mg/kg
East Base 3*	7-10-17	3.7 mg/kg/Removed	West W-16A	7-18-17	< 0.35 mg/kg
East Base 1A*	7-18-17	7.9 mg/kg/Removed	West W-17A	7-18-17	< 0.34 mg/kg
East Base 2A*	7-18-17	4.3 mg/kg/Removed	West W-18A	7-18-17	< 0.34 mg/kg
East Base 3A	7-18-17	< 0.37 mg/kg	West W-19A	7-18-17	< 0.35 mg/kg
--	--	--	West W-20A	7-18-17	< 0.36 mg/kg
South Bottom	7-10-17	< 0.36 mg/kg	West W-21A	7-18-17	< 0.35 mg/kg
--	--	--	West W-22A	7-18-17	< 0.36 mg/kg
Top-1	7-10-17	0.38 mg/kg	West W-23A	7-18-17	< 0.36 mg/kg
Top-2	7-10-17	< 0.37 mg/kg	West W-24A	7-18-17	< 0.36 mg/kg
--	--	--	West W-25A	7-18-17	< 0.39 mg/kg
--	--	--	West Wall-1	7-18-17	< 0.34 mg/kg
--	--	--	West Wall-2	7-10-17	< 0.35 mg/kg
--	--	--	West Wall 3	7-10-17	< 0.36 mg/kg

* Samples locations that exceed 1 mg/kg were re-excavated to remove the contaminated soil. If the locations are not depicted on Figure 3 - Confirmation Soil Sample Locations, then the sample locations were incorporated into the Bottom Sample (B-#) grid that was laid out after the soil removal efforts in August.

Table 1B - Confirmation Soil Sample Summary

Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)	Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)
B-1A	8-16-17	< 0.33 mg/kg	B-26A	8-16-17	0.34 mg/kg
B-2A	8-16-17	< 0.33 mg/kg	B-27A	8-21-17	< 0.42 mg/kg
B-3A	8-18-17	< 0.34 mg/kg	B-28A	8-16-17	< 0.35 mg/kg
B-4A	8-16-17	< 0.33 mg/kg	B-29A	8-21-17	< 0.36 mg/kg
B-5A	8-16-17	0.43 mg/kg	B-30A	8-16-17	< 0.34 mg/kg
B-6A	8-16-17	0.93 mg/kg/Removed	B-31A	8-21-17	0.67 mg/kg
B-6B	9-19-17	< 0.33 mg/kg	B-32A*	8-16-17	4.4 mg/kg/Removed
B-7A	8-18-17	< 0.34 mg/kg	B-32B*	9-19-17	1.2 mg/kg/Removed
			B-32C	10-11-17	< 0.37 mg/kg
B-8A	8-16-17	< 0.34 mg/kg	B-33A	8-21-17	< 0.34 mg/kg
B-9A	8-18-17	< 0.57 mg/kg	B-34A	8-21-17	< 0.33 mg/kg
B-10A	8-16-17	< 0.33 mg/kg	B-35A	8-16-17	< 0.33 mg/kg
B-11A	8-18-17	< 0.34 mg/kg	B-36A**	8-21-17	3 mg/kg/Removed
B-12A	8-16-17	< 0.35 mg/kg	B-37A	8-16-17	< 0.34 mg/kg
B-13A*	8-18-17	2.9 mg/kg/Removed	B-38A	8-16-17	< 0.33 mg/kg
B-13B*	9-19-17	1.7 mg/kg/Removed			
B-13C	10-11-17	< 0.39 mg/kg			
B-14A	8-16-17	< 0.34 mg/kg	B-39A	8-21-17	< 0.34 mg/kg
B-15A	8-16-17	< 0.33 mg/kg	B-40A	8-16-17	0.45 mg/kg
B-16A	8-16-17	< 0.34 mg/kg	B-41A*	8-21-17	2.3 mg/kg/Removed
			B-41B	9-19-17	< 0.35 mg/kg
B-17A	8-18-17	< 0.33 mg/kg	B-42A	8-21-17	< 0.34 mg/kg
B-18A	8-16-17	< 0.33 mg/kg	B-43A	8-21-17	< 0.34 mg/kg
B-19A	8-18-17	< 0.35 mg/kg	B-44A*	8-16-17	1.1 mg/kg/Removed
			B-44B	9-19-17	0.39 mg/kg
B-20A	8-16-17	< 0.35 mg/kg	B-45A*	8-16-17	4.2 mg/kg/Removed
			B-45B*	9-19-17	2.4 mg/kg/Removed
			B-45C	10-11-17	< 0.39 mg/kg
B-21A*	8-18-17	1.5 mg/kg/Removed	B-46A	8-16-17	0.95 mg/kg/Removed
			B-46B*	9-19-17	1.6 mg/kg/Removed
			B-46C	10-11-17	< 0.39 mg/kg
B-21B	9-19-17	< 0.34 mg/kg	B-47A	8-21-17	< 0.33 mg/kg
B-22A	8-16-17	< 0.34 mg/kg	B-48A	8-16-17	< 0.34 mg/kg
B-23A	8-18-17	< 0.35 mg/kg	B-49A	8-21-17	< 0.42 mg/kg
B-24A	8-16-17	< 0.33 mg/kg	B-50A*	8-16-17	1.7 mg/kg/Removed
B-25A	8-16-17	< 0.34 mg/kg		9-19-17	0.55 mg/kg

* Samples locations that exceed 1 mg/kg, or contained PCBs greater than 0.5 mg/kg and were adjacent to locations with greater than 1 mg/kg, were re-excavated to remove the contaminated soil.

+ The PCB-contaminated soil was removed from this location, but a confirmation sample from the B-36 location could not be collected due to the presence of several feet of buried boulders (i.e. no soil to sample). The boulders extended into the adjacent sample areas that contained PCBs less than 1 mg/kg.

Table 1C - Confirmation Soil Sample Summary

Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)	Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)
B-51A	8-21-17	0.72 mg/kg/Removed	B-76A*	8-17-17	1.8 mg/kg/Removed
B-51B	9-19-17	< 0.37 mg/kg	B-76B	9-19-17	< 0.36 mg/kg
B-52A	8-21-17	< 0.34 mg/kg	B-77A	8-21-17	0.56 mg/kg
B-53A*	8-21-17	1.8 mg/kg/Removed	B-78A	8-17-17	< 0.35 mg/kg
B-53B	9-19-17	0.52 mg/kg	B-79A	8-21-17	< 0.35 mg/kg
B-54A*	8-16-17	2.0 mg/kg/Removed	B-80A	8-17-17	< 0.36 mg/kg
B-54B	9-19-17	< 0.35 mg/kg	B-81A*	8-21-17	1.5 mg/kg/Removed
B-55A	8-16-17	< 0.33 mg/kg	B-81B	9-19-17	< 0.34 mg/kg
B-56A	8-16-17	0.44 mg/kg	B-82A	8-21-17	< 0.35 mg/kg
B-57A	8-21-17	< 0.34 mg/kg	B-83A	8-21-17	< 0.34 mg/kg
B-58A	8-16-17	< 0.36 mg/kg	B-84A	8-17-17	< 0.33 mg/kg
B-59A	8-21-17	0.36 mg/kg	B-85A*	8-17-17	1.2 mg/kg/Removed
B-60A	8-16-17	< 0.36 mg/kg	B-85B	9-19-17	< 0.37 mg/kg
B-61A	8-21-17	0.74 mg/kg/Removed	B-86A	8-17-17	< 0.33 mg/kg
B-61B	9-19-17	< 0.36 mg/kg	B-87A	8-21-17	< 0.34 mg/kg
B-62A	8-21-17	0.79 mg/kg/Removed	B-88A	8-17-17	0.38 mg/kg
B-62B	9-19-17	< 0.37 mg/kg	B-89A	8-21-17	0.56 mg/kg
B-63A*	8-21-17	2.1 mg/kg/Removed	B-90A	8-17-17	0.43 mg/kg
B-63B	9-19-17	0.5 mg/kg	B-91A	8-21-17	< 0.35 mg/kg
B-64A*	8-16-17	2.6 mg/kg/Removed	B-92A	8-21-17	< 0.35 mg/kg
B-64B	9-19-17	< 0.35 mg/kg	B-93A	8-21-17	< 0.34 mg/kg
B-65A*	8-16-17	2.7 mg/kg/Removed	B-94A	8-17-17	< 0.35 mg/kg
B-65B	9-19-17	< 0.35 mg/kg	B-95A	8-17-17	< 0.35 mg/kg
B-66A*	8-16-17	1.7 mg/kg/Removed	B-96A	8-17-17	0.35 mg/kg
B-66B	9-19-17	< 0.36 mg/kg	B-97A	8-17-17	< 0.35 mg/kg
B-67A	8-21-17	< 0.34 mg/kg	B-98A	8-21-17	0.59 mg/kg
B-68A	8-16-17	< 0.33 mg/kg	B-99A	8-21-17	< 0.35 mg/kg
B-69A	8-21-17	< 0.35 mg/kg	B-100A	8-17-17	0.9 mg/kg/Removed
B-70A	8-16-17	< 0.38 mg/kg	B-100B	9-19-17	< 0.37
B-71A	8-21-17	0.46 mg/kg			
B-72A	8-21-17	< 0.35 mg/kg			
B-73A	8-17-17	< 0.34 mg/kg			
B-74A*	8-17-17	1.3 mg/kg/Removed			
B-74B	9-19-17	< 0.36 mg/kg			
B-75A	8-17-17	0.87 mg/kg/Removed			
B-75B	9-19-17	< 0.36 mg/kg			

* Samples locations that exceed 1 mg/kg, or contained PCBs greater than 0.5 mg/kg and were adjacent to locations with greater than 1 mg/kg, were re-excavated to remove the contaminated soil.

Table 1D - Confirmation Soil Sample Summary

Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)	Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)
B-101A	8-21-17	0.76 mg/kg/Removed	B-126A	8-21-17	< 0.34 mg/kg
B-101B	9-19-17	< 0.37 mg/kg	B-127A	8-21-17	< 0.34 mg/kg
B-102A	8-21-17	< 0.35 mg/kg	B-128A	8-17-17	< 0.36 mg/kg
B-103A	8-21-17	0.42 mg/kg	B-129A	8-21-17	< 0.36 mg/kg
B-104A	8-21-17	< 0.35 mg/kg	B-130A	8-17-17	< 0.37 mg/kg
B-105A	8-17-17	< 0.35 mg/kg	B-131A	8-17-17	< 0.4 mg/kg
B-106A	8-21-17	< 0.34 mg/kg	B-132A	8-21-17	< 0.34 mg/kg
B-107A	8-21-17	< 0.35 mg/kg			
B-108A	8-17-17	0.6 mg/kg/Removed	B-133A	8-21-17	< 0.35 mg/kg
B-108B	9-19-17	< 0.36 mg/kg			
B-109A*	8-21-17	4 mg/kg/Removed	B-134A	8-17-17	0.68 mg/kg/Removed
B-109B	9-19-17	< 0.35 mg/kg	B-134B	9-19-17	< 0.37 mg/kg
B-110A	8-17-17	0.94 mg/kg	B-135A*	8-17-17	2.1 mg/kg/Removed
B-110B	9-19-17	< 0.37 mg/kg	B-135B	9-19-17	< 0.35 mg/kg
			B-136A*	8-17-17	3.7 mg/kg/Removed
B-111A	8-21-17	0.5 mg/kg	B-136B	9-19-17	< 0.37 mg/kg
B-112A	8-21-17	< 0.34 mg/kg	B-137A	8-21-17	< 0.33 mg/kg
B-113A*	8-21-17	2.1 mg/kg/Removed			
B-113B	9-19-17	< 0.35 mg/kg	B-138A	8-17-17	< 0.35 mg/kg
B-114A	8-21-17	< 0.34 mg/kg	B-139A	8-17-17	< 0.36 mg/kg
B-115A	8-17-17	< 0.34 mg/kg	B-140A	8-17-17	< 0.35 mg/kg
B-116A	8-21-17	< 0.36 mg/kg	B-141A	8-17-17	< 0.35 mg/kg
B-117A	8-21-17	< 0.38 mg/kg	B-142A	8-21-17	< 0.36 mg/kg
B-118A	8-17-17	0.77 mg/kg	B-143A	8-21-17	< 0.36 mg/kg
B-119A	8-21-17	< 0.35 mg/kg	B-144A	8-17-17	< 0.35 mg/kg
			B-145A*	8-17-17	1.4 mg/kg/Removed
B-120A	8-17-17	< 0.34 mg/kg	B-145B	9-19-17	1.0 mg/kg/Removed
			B-145C	10-11-17	< 0.39 mg/kg
B-121A*	8-17-17	1.1 mg/kg/Removed			
B-121B	9-19-17	< 0.36 mg/kg	B-146A	8-21-17	< 0.35 mg/kg
B-122A*	8-17-17	1.1 mg/kg/Removed			
B-122B	9-19-17	< 0.37 mg/kg	B-147A	8-21-17	< 0.35 mg/kg
B-123A*	8-17-17	1.2 mg/kg/Removed	B-148A	8-17-17	0.94 mg/kg
B-123B	9-19-17	< 0.37 mg/kg	B-148B	9-19-17	< 0.37 mg/kg
			B-149A	8-17-17	0.69 mg/kg/Removed
B-124A	8-21-17	< 0.34 mg/kg	B-149B	9-19-17	< 0.37 mg/kg
			B-150A	8-17-17	0.72 mg/kg/Removed
B-125A	8-17-17	< 0.33 mg/kg	B-150B	9-19-17	< 0.37 mg/kg

* Samples locations that exceed 1 mg/kg, or contained PCBs greater than 0.5 mg/kg and were adjacent to locations with greater than 1 mg/kg, were re-excavated to remove the contaminated soil.

Table 1E - Confirmation Soil Sample Summary

Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)	Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)
B-151A	8-17-17	0.85 mg/kg/Removed	B-176A	8-21-17	< 0.34 mg/kg
B-151B	9-19-17	< 0.36 mg/kg			
B-152A	8-21-17	0.55 mg/kg	B-177A	8-21-17	0.56 mg/kg
B-153A	8-21-17	< 0.34 mg/kg	B-178A	8-17-17	< 0.53 mg/kg
B-154A	8-17-17	< 0.35 mg/kg	B-179A	8-21-17	< 0.33 mg/kg
B-155A*	8-17-17	2.3 mg/kg/Removed	B-180A	8-17-17	0.74 mg/kg/Removed
B-155B	9-19-17	< 0.37 mg/kg	B-180B	9-19-17	< 0.36 mg/kg
B-156A	8-17-17	< 0.36 mg/kg	B-181A	8-21-17	< 0.35 mg/kg
B-157A	8-21-17	< 0.35 mg/kg	B-182A	8-21-17	< 0.36 mg/kg
B-158A	8-17-17	< 0.38 mg/kg	B-183A	8-21-17	< 0.36 mg/kg
B-159A	8-21-17	< 0.35 mg/kg	B-184A	8-21-17	< 0.36 mg/kg
B-160A	8-17-17	< 0.33 mg/kg	B-185A	8-17-17	< 0.35 mg/kg
B-161A	8-21-17	< 0.34 mg/kg	B-186A	8-21-17	< 0.44 mg/kg
B-162A	8-21-17	0.96 mg/kg/Removed			
B-162B	9-19-17	< 0.36 mg/kg	B-187A	8-21-17	< 0.37 mg/kg
B-163A	8-21-17	0.55 mg/kg	B-188A	8-17-17	< 0.35 mg/kg
B-164A	8-21-17	< 0.34 mg/kg	B-189A	8-21-17	< 0.34 mg/kg
B-165A	8-17-17	0.97 mg/kg/Removed			
B-165B	9-19-17	< 0.36 mg/kg	B-190A	8-17-17	< 0.34 mg/kg
B-166A	8-21-17	0.9 mg/kg/Removed			
B-166B	9-19-17	< 0.37 mg/kg	B-191A	8-21-17	< 0.34 mg/kg
B-167A	8-21-17	0.41 mg/kg	B-192A	8-21-17	< 0.35 mg/kg
B-168A	8-17-17	< 0.36 mg/kg	B-193A	8-21-17	0.43 mg/kg
B-169A*	8-17-17	1.4 mg/kg/Removed			
B-169B	9-19-17	< 0.37 mg/kg	B-194A	8-21-17	0.54 mg/kg
B-170A	8-17-17	< 0.36 mg/kg	B-195A	8-18-17	< 0.35 mg/kg
B-171A	8-21-17	< 0.36 mg/kg	B-196A	8-21-17	< 0.35 mg/kg
B-172A	8-17-17	< 0.36 mg/kg	B-197A	8-21-17	0.38 mg/kg
B-173A*	8-17-17	0.92 mg/kg /Removed			
B-173B	9-19-17	0.44 mg/kg	B-198A	8-18-17	< 0.34 mg/kg
B-174A	8-21-17	< 0.34 mg/kg	B-199A*	8-21-17	1.4 mg/kg/Removed
			B-199B	9-19-17	< 0.34 mg/kg
B-175A	8-17-17	< 0.33 mg/kg	B-200A	8-18-17	0.52 mg/kg/Removed

* Samples locations that exceed 1 mg/kg, or contained PCBs greater than 0.5 mg/kg and were adjacent to locations with greater than 1 mg/kg, were re-excavated to remove the contaminated soil.

Table 1F - Confirmation Soil Sample Summary

Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)	Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)
B-201A	8-21-17	< 0.36 mg/kg	B-226A	8-18-17	< 0.45 mg/kg
B-202A	8-21-17	< 0.34 mg/kg	B-227 A	8-18-17	< 0.36 mg/kg
B-203A	8-21-17	< 0.34 mg/kg	B-228A	8-18-17	< 0.35 mg/kg
B-204A	8-21-17	< 0.34 mg/kg	B-229A	8-18-17	< 0.34 mg/kg
B-205A	8-18-17	< 0.34 mg/kg	B-230A	8-18-17	< 0.34 mg/kg
B-206A	8-21-17	< 0.34 mg/kg	B-231A	8-18-17	< 0.35 mg/kg
B-207A	8-21-17	0.46 mg/kg	B-232A	8-18-17	< 0.35 mg/kg
B-208A	8-21-17	< 0.33 mg/kg	B-233A	8-18-17	< 0.37 mg/kg
B-209A	8-21-17	0.38 mg/kg	B-234A	8-18-17	< 0.36 mg/kg
B-210A	8-18-17	< 0.33 mg/kg	B-235A	8-18-17	< 0.35 mg/kg
B-211A	8-21-17	< 0.35 mg/kg	B-236A	8-18-17	0.39 mg/kg
B-212A	8-21-17	< 0.35 mg/kg	B-237A	8-18-17	0.44 mg/kg
B-213A	8-21-17	< 0.35 mg/kg	B-238A	8-18-17	< 0.34 mg/kg
B-214A	8-18-17	< 0.36 mg/kg	B-239A	8-18-17	0.4 mg/kg
B-215A	8-18-17	< 0.35 mg/kg	B-240A	8-18-17	< 0.34 mg/kg
B-216A	8-18-17	< 0.35 mg/kg	B-241A	8-18-17	0.58 mg/kg
B-217A	8-18-17	< 0.37 mg/kg	B-242A	8-18-17	< 0.36 mg/kg
B-218A	8-18-17	< 0.36 mg/kg	B-243A	8-18-17	0.6 mg/kg
B-219A	8-18-17	< 0.37 mg/kg	B-244A	8-18-17	< 0.35 mg/kg
B-220A	8-18-17	< 0.35 mg/kg	B-245A	8-18-17	< 0.35 mg/kg
B-221A*	8-18-17	14 mg/kg/Removed			
B-221B	9-19-17	< 0.35 mg/kg	B-246A	8-18-17	< 0.34 mg/kg
B-222A	8-87-17	0.49 mg/kg	B-247A	8-18-17	< 0.34 mg/kg
B-223A	8-18-17	0.45 mg/kg	B-248A	8-18-17	< 0.35 mg/kg
B-224A	8-18-17	< 0.35 mg/kg	B-249A	8-18-17	< 0.34 mg/kg
B-225A	8-18-17	< 0.35 mg/kg	B-250A	8-18-17	< 0.34 mg/kg

* Samples locations that exceed 1 mg/kg, or contained PCBs greater than 0.5 mg/kg and were adjacent to locations with greater than 1 mg/kg, were re-excavated to remove the contaminated soil.

Table 1G - Confirmation Soil Sample Summary

Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)	Bottom Sample I.D.	Sample Date	PCBs Soxhlet Extraction Results (mg/kg)
B-251A	8-18-17	< 0.35 mg/kg	B-276A	8-18-17	0.43 mg/kg
B-252A	8-18-17	< 0.35 mg/kg	B-277 A*	8-18-17	2.5 mg/kg/Removed
B-253A	8-18-17	0.61 mg/kg	B-277B	9-19-17	< 0.37 mg/kg
B-254A	8-18-17	0.64 mg/kg	B-278A	8-18-17	< 0.36 mg/kg
B-255A	8-18-17	< 0.35 mg/kg	B-279A	8-18-17	< 0.35 mg/kg
B-256A	8-18-17	< 0.37 mg/kg	B-280A	8-18-17	< 0.38 mg/kg
B-257A	8-18-17	< 0.34 mg/kg	B-281B	9-19-17	< 0.36 mg/kg
B-258A	8-18-17	< 0.36 mg/kg	B-282B	9-19-17	< 0.36 mg/kg
B-259A*	8-18-17	2.3 mg/kg/Removed	B-283B	9-19-17	< 0.36 mg/kg
B-259B	9-19-17	< 0.36 mg/kg	B-284B	9-19-17	< 0.37 mg/kg
B-260A	8-18-17	< 0.34 mg/kg	B-285B	9-19-17	< 0.35 mg/kg
B-261A	8-18-17	0.91 mg/kg/Removed			
B-261B	9-19-17	< 0.35 mg/kg			
B-262A	8-18-17	< 0.35 mg/kg			
B-263A	8-18-17	0.76 mg/kg			
B-264A	8-18-17	< 0.37 mg/kg			
B-265A	8-18-17	< 0.35 mg/kg			
B-266A	8-18-17	< 0.34 mg/kg			
B-267A	8-18-17	< 0.36 mg/kg			
B-268A	8-18-17	< 0.36 mg/kg			
B-269A	8-18-17	< 0.35 mg/kg			
B-270A	8-18-17	0.63 mg/kg			
B-271A	8-18-17	0.38 mg/kg			
B-272A	8-18-17	< 0.36 mg/kg			
B-273A	8-18-17	< 0.36 mg/kg			
B-274A*	8-18-17	2.3 mg/kg/Removed			
B-274B	9-19-17	< 0.34 mg/kg			
B-275A	8-18-17	0.49 mg/kg			

* Samples locations that exceed 1 mg/kg, or contained PCBs greater than 0.5 mg/kg and were adjacent to locations with greater than 1 mg/kg, were re-excavated to remove the contaminated soil.

3.2 Decontamination Activities & Wipe Sampling

Between each round of soil excavation, CTR personnel manually removed all loose soil from their loader and excavator using the dry wipe method so that decontamination fluids requiring disposal were not unnecessarily generated. Double-wash/rinse wet decontamination methods would be implemented if the dry decontamination of the equipment was not successful. After each round of soil excavation, LES collected multiple wipe samples from the CTR equipment for analysis of PCBs using the Soxhlet extraction method to document that PCBs were not present. PCBs were never detected in any of the wipe samples collected at a concentration exceeding the minimum laboratory detection limit of 1 microgram per cubic centimeter ($\mu\text{g}/\text{cm}^3$). A copy of the laboratory report from the final wipe samples on October 11, 2017 is included in Appendix E of the report.

3.3 Air Sampling & Monitoring Activities

During every day of onsite activities, LES completed air monitoring sampling to document that contaminants were not being dispersed into the air and potentially impacting occupants of the adjacent properties. LES utilized calibrated field equipment including a dataRAM for total dust particulate monitoring and a photoionization detector (PID) for monitoring of total VOCs. The lowest air monitoring limits outlined in the site-specific HASP were greater than 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) particulates in dust, and greater than 5 parts per million (ppm) total VOCs for a sustained period of one minute. Neither monitoring exposure limit were ever reached during any day of the onsite work.

In addition, during each day of the initial soil excavation and segregation activities commencing on June 16, 2017, LES collected both background (upwind) and downwind air samples for analysis of airborne PCBs using EPA Method TO-10A. The samples were collected over the course of the workday using the low-flow polyurethane foam (PUF) sample collection methodology. A total of five background (BG-1 to BG-5) and downwind (DW-1 to DW-5) samples were collected and submitted for laboratory analyses from onsite activities potentially generating dust that were completed June 16 to 26, 2017. Due to a laboratory extraction error, the samples collected on June 22 and 23, 2017 could not be analyzed.

None of the air samples that were analyzed contained detectable concentrations of PCBs greater than 0.33 micrograms ug/m³, which is significantly less than the HASP target concentration of 500 ug/m³ (0.5 milligrams [mg]/m³). Copies of the laboratory reports from the air sample analyses are included in Appendix E.

3.4 Quality Assurance/Quality Control Practices

The CTDEEP's Quality Assurance and Quality Control (QA/QC) Guidance was used to ensure that the analytical results generated during the investigation are of known and appropriate quality. Specifically, the Laboratory Quality Assurance Control Reasonable Confidence Protocols (RCPs) were utilized for all laboratory analytical methods. The Laboratory Quality Assurance and Quality Control, Data Quality Assessment and Data Usability Evaluation (DQA/DUE) Guidance were utilized to ensure that the analytical data used is of known and sufficient level of quality for the intended purpose. All samples collected in the field were stored in a manner that preserved the integrity of the sample chemistry. Samples intended for organic analyses were stored in an ice-filled cooler until delivery to the laboratory. Chain-of-Custody (COC) forms were filled out and accompanied all samples collected as a legal record of possession of the sample. The COC was initiated in the field and accompanied the containers during sample collection, transportation to the lab, analysis, and final disposal of the sample. All sampling equipment was either dedicated to a specific sample or was decontaminated prior to and between each use. Sampling equipment was not placed near solvents, gasoline, or materials that may have impacted the integrity of the samples.

3.5 Data Quality Assessment and Data Usability Evaluation (DQA/DUE)

The three-hundred and thirty-four (334) final confirmation soil samples, three (3) bulky debris samples, and two (2) final equipment wipe samples were submitted to a state-certified analytical laboratory for analyses using the CTDEEP Reasonable Confidence Protocols (RCPs) established for PCBs. The samples were collected to determine if the onsite soil contains PCBs less than the CTDEEP target cleanup concentrations of 1 mg/kg for soil/bulky material and 10 ug/cm³ for the wipe samples.

A data quality assessment and data usability evaluation were performed for the data generated in accordance with CTDEEP guidance and noted the following quality control non-conformances. Non-conformances related to surrogate blank recoveries, Laboratory Control Sample/Laboratory

Control Sample Duplicates (LCS/LCSDs) Relative Percent Differences (RPDs), Matrix Spike/Matrix Spike Duplicates (MS/MSDs) Relative Percent Differences (RPDs), and extraction holding time (one sample only) do not have significant bearing on the accuracy and usability of the data for its intended uses. In all cases the non-conformances had no impact on the data usability and the data is of sufficient quality and precision for its intended use based on multiple lines of evidence.

Based on the above findings from the DQA and DUE, the analytical data is of adequate quality and of sufficient accuracy, precision and sensitivity to utilize the data for its intended purposes.

4.0 CONCLUSIONS & RECOMMENDATIONS

Based upon the results of the confirmation bulky debris and soil samples collected from the Reclamation Yard from June 16 to October 11, 2017, no additional remediation would be required. However, LES recommends that if additional soil and debris from Reclamation Yard be disturbed, additional sampling of the fill material should be conducted to ensure that PCBs are not present at concentrations exceeding 1 mg/kg.